AMENDMENTS TO THE CLAIMS

Kindly amend the claims as follows:

Claims 1-38 (cancelled)

39. (New) An electronic device for controlling the operation of an AC motor, the device being configured to be connectable to a voltage supply unit generating an input harmonic voltage signal of a certain frequency fo and to be connectable to the AC motor, and being configured and operable to transform the input voltage signal into a periodic function of a driving voltage signal, the period of said function being formed by two alternating groups of opposite polarities, each of said groups including a desired number of pulses each shaped as a half-wave of the input voltage signal, and at least one of said groups including at least two substantially gapless unipolar pulses, said periodic function having a frequency f smaller than the frequency fo by a predetermined factor defined by a number N of the pulses within the period of the driving signal.

40. (New) The device of Claim 39, comprising a rectifier utility connectable to the voltage supply unit for receiving the input voltage signal, the rectifier utility being configured and operable for processing the input voltage signal to produce a sequence of the unipolar gapless pulses each shaped as the half wave of the input voltage signal; and a pulse grouping utility configured and operable to receive said sequence of the unipolar gapless pulses and process it to arrange the pulses in the groups of alternating polarities.

41. (New) The device of Claim 40, wherein the rectifier utility comprises a diode bridge assembly.

42. (New) The device of Claim 40, wherein the pulse grouping utility comprises a transistor bridge to create the groups of the half- wave pulses of one or the other polarity.

43. (New) The device of Claim 40, wherein said pulse grouping utility is configured and operable to divide each of the half- wave pulses into a predetermined number of high frequency sub-pulses.

44. (New) The device of Claim 43, wherein said pulse grouping utility is configured and operable to vary a number of the high frequency sub- pulses inside the half wave pulse to equalize

maximal amplitudes of electric current generated by the; half-waves and to keep the amplitudes equal to a predetermined value.

45. (New) The device of Claim 43, wherein said pulse grouping utility is configured and operable to set the number of the sub-pulses depending on a position of the corresponding half wave pulse inside the group.

46. (New) The device of Claim 43, comprising a controller utility configured and operable to measure an electric current through the motor during each half wave of the input voltage, and adjusting the width of the sub-pulses inside each of the half waves to provide that maximal values of the electric currents during all the half waves are equalized and kept equal to a preset value.

47. (New) The device of Claim 43, wherein said pulse grouping utility is configured and operable to define a width of the high frequency sub pulse at the beginning of each of the half wave pulses to be larger than the sub pulses width at the end of the half wave pulse.

48. (New) The device of Claim 47, comprising a controller utility configured and operable for measuring cost of the motor during operation and controllably decreasing the width of the sub-pulses in the last half wave of the group, so as to provide that the electric current through the motor is equal to zero when the group changes its polarity.

49. (New) The device of Claim 39, comprising a controller utility configured and operable to compare a time profile of the electric current function during the operation of the motor with a standard sinusoidal curve, and controllably adjusting a width of the high frequency sub-pulses to provide optimized fitting between the electric current profile and the sinusoidal curve.

50. (New) The device of Claim 39, wherein the driving voltage function is asymmetric, the two groups of opposite polarities having different number of the half wave pulses.

51. (New) The device of Claim 39, wherein the driving voltage function is symmetric, the two groups of opposite polarities having the same number of the half wave pulses.

52. (New) The device of Claim 43, wherein the last half wave pulse of the first group is followed by a narrow demagnetizing sub-pulse of the opposite polarity of the second group.

53. (New) The device of Claim 39, comprising a controller utility configured and operable for measuring a rotational speed of the motor and controllably varying the number of the half wave pulses in the group to maintain a required value of the rotational speed.

54. (New) The device of 1, comprising a comparator utility configured and operable for signaling beginning and end of a positive half wave period of the input voltage signal and for signaling beginning and end of a negative half-wave period of the input voltage signal.

55. (New) The device of Claim 41, wherein said pulse grouping utility is configured and operable to divide each of the half- wave pulses into a predetermined number of high frequency sub-pulses.

56. (New) The device of Claim 42, wherein said pulse grouping utility is configured and operable to divide each of the half- wave pulses into a predetermined number of high frequency sub-pulses.

57. (New) The device of Claim 44, comprising a controller utility configured and operable to measure an electric current through the motor during each half wave of the input voltage, and adjusting the width of the sub-pulses inside each of the half waves to provide that maximal values of the electric currents during all the half waves are equalized and kept equal to a preset value.

58. (New) The device of Claim 45, comprising a controller utility configured and operable to measure an electric current through the motor during each half wave of the input voltage, and adjusting the width of the sub-pulses inside each of the half waves to provide that maximal values of the electric currents during all the half waves are equalized and kept equal to a preset value.